

After Ceausescu's death in 1990 over 120,000 children were discovered living in grim institutions. In the county of Jud Bihor in Western Romania, children who had been assessed as 'mentally retarded' at the age of three were sent to an institution in the country village of Cadea. They were housed in old buildings that had broken windows and no heating or plumbing. It was dark and dirty and for the majority of the time the children were confined to their cots. Most of them were tied to the bars by strips of cloth tied tightly around their wrists and ankles.

The children were always dirty, hungry and cold - sixty to seventy died every winter. Their original 'retardation' was the result of early illnesses such as pneumonia and bronchitis, and years of confinement at Cadea only compounded the problem. When they were finally released in January 1991, many could neither walk nor speak. All of the children rocked backwards and forwards in their distress; their eyes were glazed and unseeing. On release, many of the children were sent to hospital buildings in the mountain villages of Remeti and Bratca. It is here that the White Cross started assisting the local Romanian staff in their care.

Since the White Cross has been working with the children, over 600 people have travelled with the Mission to Romania. Some have only been able to give a few days of concentrated work, most average two months and one stayed for four years! Some work with the children, others repair the buildings and yet others deliver goods. Every volunteer is special. They raise their own money for air and train fares, insurance, food and electricity and more than half of them do it all over again and go out for a second or even third time. Old or young, with or without qualifications, the combined work and presence of these many different people has had an amazing impact on the children.

Children with blank, unseeing eyes, rocking in a world of their own are now healthy, laughing and boisterous. The accumulative effect of the White Cross volunteers with their mixture of naivety and experience, their energy, their perseverance, their hopes, their dreams and their many different ways of showing love has created a rainbow effect of bouncy, confident and individual children.

Fundatia Crucea Alba has helped White Cross Mission with the legalities of purchasing small farms, employing assistants and moving children from the mental institutions in order to live a normal family village life. We intend that these farms will be the children's homes for as long as they need. All their lives if necessary.

Buying the farms is only the beginning of a lifetime commitment to those children we take out of State care. Without a regular financial safety net we would be irresponsible if we established too many homes. We do, however, believe that this is the only way forward and are desperate for substantial funding.

The White Cross Mission is a Charitable Trust Registered in England No 1021176

52, Gwel-an-nans, Probus, Cornwall, TR2 4ND, United Kingdom

Tel (+44) (0)1726 884344 Fax (+44) (0)1726 884345 Mob (+44) (0)7775700893

Email wcm@whitecross.org.uk

www.the-white-cross.ndirect.co.uk



Spectrum computing today



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Once you've got the screen looking like Figure 1.4, press 0 and you'll be rewarded with a nice clean note. Press Enter again, and you'll be taken to the second sample editing screen, with a miniaturised representation of the envelope and another set of numbers to fiddle with. These allow you to vary the pitch of the note, which is handy for producing vibrato effects and other funky

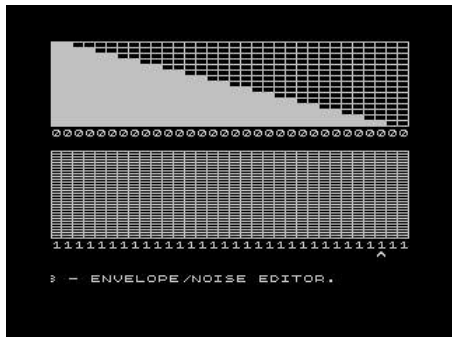


Figure 1.4

things, but we'll leave them well alone for now. Press Enter to finish editing sample 1 - now have a go at inputting the sample shown in Figure 1.5 into slot number 2. This one will give us a longer note, which will come in handy for the 'dah's in 'dat dah, dat dah, dat dah dah'.

Done that? Good. Time to leave the sample editor and tackle the melody, then. The first thing to notice about Twinkle Twinkle Little Star is that there's a lot of repetition in it. If you take the notes of the first three lines:

1. C C G G A A G

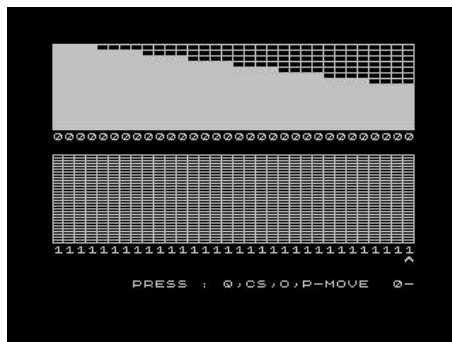


Figure 1.5

2. F F E E D D C

3. G G F F E E D

you can assemble the whole song by playing them in the order 1, 2, 3, 3, 1, 2. And that's exactly what we'll do! In tracker land, songs are divided into equal-sized repeatable chunks called patterns. You work on one pattern at a time, and if you now look at the bottom of the menu area, you'll notice an indicator saying "P:01", telling you that you're currently viewing pattern number 1. The arrows next to it will let you flick between patterns, and a quick bit of browsing will show that there are a total of 31 patterns to play with.

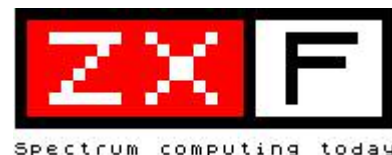
Now, there are essentially only two differences between conventional music notation and tracker notation - firstly, you read tracker notation downwards rather than across, and secondly, gaps between notes are represented by an appropriate number of vertical spaces in the track, because we move down it at a constant rate. To give us a bit of breathing space (and the opportunity to add some twiddly bits later), we'll leave a single row gap between our notes.

With a bit of humming and finger tapping (best graphically represented as O.O.O.O.O.O... , where we play a note on each O) we decide that we need 16 rows in each pattern, so go to 'Other' and 'Change patterns length', and enter 15. Yes, I thought that'd catch you out. We start counting from zero, you see. I should mention that 16 rows per pattern is less than you're likely to use in a 'real' composition - 32, 48 and 64 are more usual choices, depending on the time signature of the music - but it happens to work nicely here.

So, after all that preparation, it's finally time to click on 'Edit' and launch ourselves into the tracker proper. This gives us a new cursor in the central portion of the screen, controlled by the cursor keys. The arrow pointer is still controllable with Q/Caps/O/P, but in edit mode, most of the menu becomes inactive - selecting 'stop' will bring you back to work mode at any time.

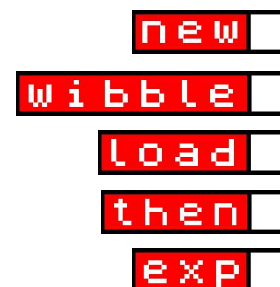
With our edit cursor hovering over the first dash of row 00, we can drop a note in place. The Z-M keys on the bottom row are our piano keyboard, with S,D,G,H,J being the black notes that we won't need for today's little recital, and Enter being the thing to press if you want to remove a note. Whichever note you pick, it'll be a bit quiet at the moment because we haven't chosen a sample for it yet. The sample number is the first digit to the right of the note, so we'll fill that in with a 1, as shown in figure 1.6.

We're presented with a very low note, because we're in the bottom octave, as indicated by that



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If you enjoy ZXF and you want it to continue then consider yourself duty bound to let me know this (mail@cwoodcock.co.uk or by the feedback form). All other feedback will be gratefully received too.

ZXF now has a voluntary purchase scheme. If you have downloaded and enjoyed an issue of ZXF, and if you are able to afford to, please consider paying £1 for your issue via the Paypal button on at the ZXF website ('magazine' page).

If you would like to contribute to future issues of ZXF - even if it's just to write a letter - **please do**; contact me again by the email address below.

Editor: C Woodcock (mail@cwoodcock.co.uk)

Website: www.cwoodcock.co.uk/zxf

Contributors this issue: Kevin Bennet, Matthew Harrodine, Matthew Westcott, John King and Thomas Eberle. A big thankyou also to all letter writers and news contributors.

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SOUNDTRACKER

Creating AY tunes is something I'd love to have a go at. I remember once upon a time I thinking it would be as easy as putting a tune together on a midi sequencer. Then I took a look at tracker software and that naive idea jumped over the fence and ran away across the field laughing. Thank God for Matthew Westcott, then, who is here now to take us by the hand...

Want to make music for the 128K sound chip, but feel nauseous at the thought of screens full of PLAY statements? Can't say I blame you. What you need is a tracker.

There are a whole host of tracker programs available for the Spectrum, and Soundtracker, being the oldest, is certainly not the most fully-featured - it just happens to be the one I know. Even if you do end up frustrated by its limitations (and I haven't yet), learning it will be a good stepping stone for tackling one of the more advanced trackers... or so I've heard. One thing's for sure, though - it's a program with an air of mystery about it, ever since Your Sinclair published it on the covertape with rather inadequate instructions.

As ever, World Of Spectrum is the place to go to grab a copy:

<ftp://ftp.worldofspectrum.org/pub/sinclair/utis/SoundtrackerV1.1.tap.zip>. I'm aware of a couple of slightly duff versions in existence, the YS covertape being one of them, which suffer from such things as numbers in the sample editor being obliterated when you move your cursor over them - the WOS copy is a good 'un, though.

After loading up Soundtracker, you'll be presented with the screen shown in Figure 1.1. The top part of the screen is the menu area, from where all the other features of the tracker can be accessed via friendly clicky boxes. You can move the pointer around this area with keys Q, Caps Shift, O and P (sorry QAOP fans - the A key is already taken...), and select things with space. Initially, the most obvious thing to do is select Play and listen to the demo tune for a bit, and stop it when you've had enough of that little ditty.

The middle part of the screen is the tracker itself, where you'll actually enter the notes to compose your magnum opus. The bottom part of the screen is the Spectrum Analyser, which doesn't do much except sit there looking pretty.

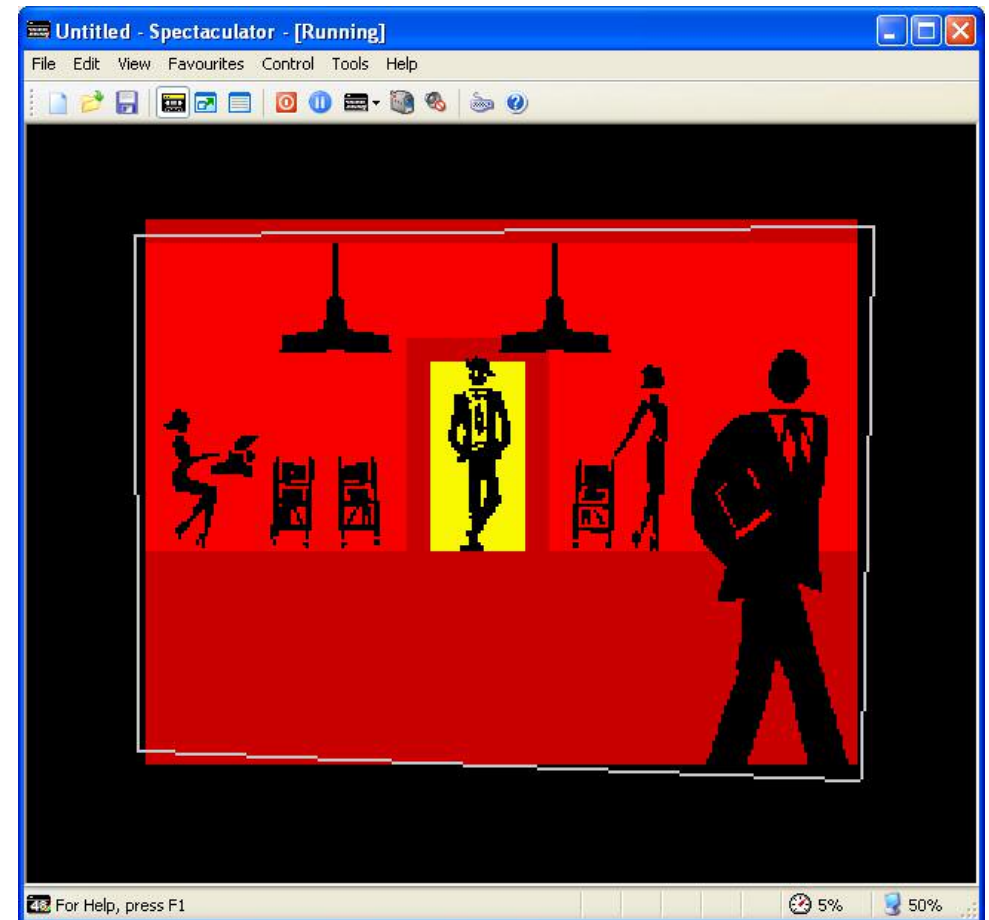


Figure 1.1: Soundtracker loaded

Let's start with a blank canvas. Clicking on 'Other' will bring up a second page of options - your pointer will then be hovering over the 'Return' button, so you can happily swap between the two. From the 'Other' page, select 'Clear song' and confirm with Y. You'll notice that the mysterious digits in the centre have now changed into neat rows of dashes and zeroes, ready to be filled with our handiwork.

For our first lesson, we'll have a go at writing a rendition of Twinkle Twinkle Little Star, as suggested by comp.sys.sinclair's esteemed lurker Dave. But before we do, here's a quick summary of soundtracker theory.

Anyone who hasn't been living in a cave since 1980 will be familiar with the concept of a sample, a snippet of sound that you record from somewhere and then play back at strategic points in a music track, and then get sued over if you're Vanilla Ice. In the world of trackers, tunes are composed entirely from samples, played back at varying pitches. A composer on the Amiga or PC might take a recording of a single piano note, a bass guitar note and a selection of drums, and arrange them on the tracker to be triggered at the correct times and pitches.



exploring on the Speccy - take the converted piece of 'Catch me if you can' artwork above, for example.

It's the way we imagine Spectrum software to be that now limits our vision of what it *could* be. With ZXCF we now have all we need to start thinking and creating outside of the box. And now that it's supported in emulation there's nothing stopping anyone from getting to grips with this new

technology and perhaps even starting to program with it. It's not a replacement for the old challenges; it's a new challenge altogether.

Next issue I'll be getting to grips with the interface and ResiDOS in more depth. Until then I strongly encourage you to have a play in RealSpec or Fuse and start getting your heads around the potential. I think it would be great also if other emulator

authors could consider implementing ZXCF in their programs too. Best of all would be an emulator that could read from and write to CF cards connected to a PC - now that would really get things going!

Until December...

Colin Woodcock

mail@cwoodcock.co.uk



House...

In May, Sinclair hinted at the stock problem (although it blamed the retail sector for the overestimate) and stated that it had eased production back to 200,000 units a month to compensate. In June, the share price collapsed, losing over 65% of its value, and the city experts started predicting tough times ahead.

It didn't take long as by the time July rolled around, Sinclair was around £10M in debt and looking for new money. Then, as if from nowhere, publishing magnate Robert Maxwell appears with a £12M offer for 75% of Sinclair Research. It looks to be a done deal.

Clive was duly 'relegated' to the role of technical consultant whilst Maxwell began the search for a new chief executive. He eventually appointed Bill Jeffrey from within the ranks. It is entirely possible that Sir. Clive was happy at the prospect of returning to his 'drawing board' having admitted a couple of months previously (in Sinclair User) "I don't know much about financial markets".

Maxwell withdraws, Kalms provides the lifeboat...

Almost as quickly as he appeared, Maxwell disappeared again having changed his mind about his offer for Sinclair Research. It isn't completely clear what happened but Maxwell appears to have been warned off by his advisors. With the aid of Stanley Kalm's Dixons Group, which agreed to buy £10M worth of Sinclair stock, Sinclair (and presumably Jeffrey who remained chief executive) was able to broker a deal with the company's bankers and debtors to continue trading, even withstanding a potential further loss of up to £5M.

The mysterious Spectrum 128...

In July, rumours started circulating in the general computing press about the prospect of a 128Kb

Spectrum to compete with the latest 8 bit machines. These weren't exactly strenuously denied but Sinclair was keen to play it low key. This marks a break with tradition, the Sinclair of old would have promised it to your doorstep within 28 days!

In fact, Sinclair could very easily have launched the Spectrum 128 within quite a short timescale. Instead, for purely commercial reasons, the UK would be denied until 1986. It was in September at Barcelona's Sonimag Fair that the Spectrum 128 was launched onto the Spanish market - manufac-

tured by Sinclair's partner and licensee Investronica. It featured two modes, the 'native' 128Kb mode and a 48Kb compatibility mode. It had a new sound generator, the General Instruments AY-3-8912 as found on Amstrad's CPC and the MSX machines, and a new BASIC command called PLAY to drive it. It featured a RAM disk, an area of RAM set aside and accessed in the same way as any other disk drive. It also did away with the keyword entry that had been the hallmark of the Sinclair machines since the ZX80. Instead, commands were entered letter by



MEDIA

RETRO GAMER

>Live Publishing's retro warrior goes monthly

First it was quarterly, then it was bi-monthly, then it was every six weeks, and finally, inevitably Live Publishing's **Retro Gamer** has gone monthly in its publication schedule. Issue 2 has sold out (again) and publishers **Live Publishing** are now targetting the US market as well as UK readers - hence the movement of 'Sinclair' on the front cover to fifth place (after Commodore, Sega, Nintendo and Atari - the formats Americans will be most familiar with) from first place. Don't worry - editor Martyn Carroll is a big Spectrum fan.

In recent issues **RG** has promoted ZXF also, featuring an interview with yours truly in issue 4 and information on the new ZXF book, **The ZX Spectrum on Your PC** in issue 5. The Spectrum continues to receive a high profile generally; full marks all round, by the way, for the Spectrum program listing in issue 5 (nice to see the magazine properly embracing its heritage) - I believe it's been reported there was a typo in there too, which, of course, is absolutely right and proper :) There was also a very comprehensive article on Manic Miner remakes in issue 6.

Now that **RG** is a regular publication a range of branded merchandise is being sold from the magazine's website at www.livepublishing.co.uk/content/retrogamer.shtml. A snazzy range of T-shirts will enable you to be picked out by other retro enthusiasts during the summer weeks and, of course, there's the obligatory magazine binder. Each binder holds 12 issues and would have taken three years to fill on the original publication schedule. They cost £6.99 apiece.

What things lie in store for us as the retro band-wagon gathers its pace? So far, there's no sign of any challenger to **RG** from the stables of any of the other well-established magazine publishers, although **Edge** magazine did recently acknowledge the existence of the Spectrum in a feature on Sinclair aesthetic design. Interestingly, this particular feature was published in the preceeding issue by just a plain black page with the Spectrum rainbow logo in the bottom-right corner. Iconic status, you see. Pay attention Amstrad.



Left: The Retro Gamer binder keeps 12 issues of the magazine in pristine condition (and in years to come will add £££s to your collection's value when you flog it on ebay).

Right: The Retro Gamer 48K T-shirt, modelled here by an absolutely typical Spectrum user.



SPECTRUM +3 SOFTWARE AND SPARES



HARDWARE:

3 inch 180K disc drive for +3. Reconditioned with 3 months warranty £10 each. These drives can be supplied with cream coloured facias in place of the black facias if wanted -- just ask.

Belts for the 3 inch drive £1 each. New. Loads available. (Just send a S.A.E. with order to cover postage -- correct for up to 20 belts).

Monitor lead to convert +3, +2 and +2A to use an Amstrad CTM644 colour monitor. £4 each.

3 INCH DISCS:

3 inch Blank discs: Second-hand good quality Amsoft or Maxell only supplied. All have been reformatted, verified and relabelled. 80 pence each or £7-50 for ten. Larger quantities available 100 for £65, 1000 for £450.

Sometimes available new 3 inch discs at £1 each, please ask.

JOHN R P KING

**26, GUYSFIELD DRIVE, SOUTH HORNCHURCH, RAINHAM, ESSEX.
RM13 7AJ**

TEL: 01708 630477 john@pcwking.freemove.co.uk

www.pcwking.freemove.co.uk

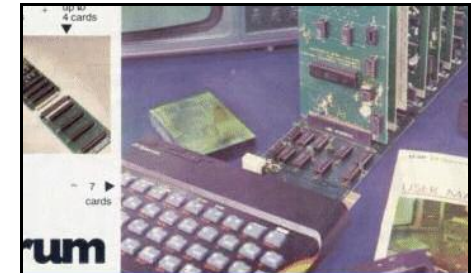
SECOND YSRNRY DOCUMENTARY RELEASE

>1983 is here

Last issue we spoke with Nick Humphries about part one of his Your Sinclair Rock'n'Roll Years video - 1982. Part two is now nearing completion also (at the time of writing, that is; you lot might well have your grubby mits on it already by the time you read this); ZXF got a sneaky look at an early edit - minus the soundtrack - and is happy to announce this new chapter to be just as fascinating and well-polished as its predecessor.



People would get an idea to make something and would try to sell it themselves in the hope that they've hit the next big thing.



Some of the inventions flew, others turned out to be too specialised to succeed.



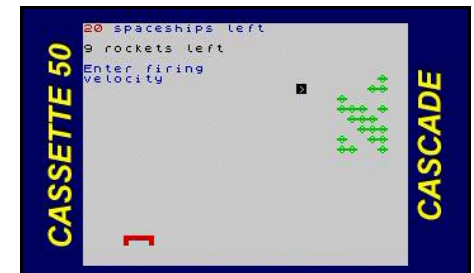
Pop groups even started putting games on their vinyl records, although the games themselves usually turned out to be very poor.



The Commodore 64 was launched this year as a serious business and home office machine.



Spectrum BASIC was so easy to learn that people would quickly knock up some games in their bedrooms before selling it themselves.



Not all BASIC games were as good, as buyers of the globally-slanted Cassette 50 soon discovered.



TV Game

Author: **Weird Science Software** Price: £1.99 cassette/free download Website: <http://wss.sinclair.hu/>

Reviewer: **Kevin Bennett**

What's that you say? Deja Vu? Yes, I reviewed TV Game last issue, but it turns out that Kevin Bennett liked the game so much he just had to write his own review. And why not? After all, it is rather good.

This game is the latest presented title from the **Weird Science Software** team who released the excellently simple and playable **Flash Beer Trilogy**. Episode 1 of that title was a 48K game without the 'AY' mad bear drinking ditty of the 2 and 3 and is available as a free download from the WSS web site. When you purchase the complete title you receive in the post a professionally produced cassette. This is also continued with TV game.

So far each of their games have been very competently produced and coded and show an excellent understanding of the Spectrum. Simple and effective sprite design, with an excellent level of overall production. For not much more than a few pounds you have a cassette that you can load into the Spectrum, and TV game can also be downloaded for emulation.

The idea of the solid screen control that was the basic hardware level of old TV games and consoles is big and simple. (Consoles took cartridges for swapping games, and TV games were solid state hardware that you... eerrr well played. There was of course the generic blank screen turn off option or the TV channels available at the time. :o)

Spectaculator v5.1 shows an excellent solid and block-like control of the screen, I can't wait to see this full screen when I can return to Spectrum hardware as it will be just the big simple presentation as intended that is already evident through emulation.

Playing TV Game

Initially the screen options don't offer any real advantage to a bat and ball game until you sit and have a fiddle and explore. If like me all your friends have left you because you can't afford to buy the beer then you can play against the computer. Of course well-beerd friends can play against each other, and if one is married his wife

can split up the inevitable fist fight.

There are five game modes that alter the nature of the game play that is basically Pong... beep...bip.....beep... bip etc.. The colour scheme and graphics also are changed to suggest more of a theme to the mode of game play.

Game mode 1: Tennis.

This is red screen clay tennis with two bats. If you beat the opponent's bat then the large number score tallies one in addition. Very simple and fun to have a ponder with.

Game mode 2: Wall Tennis Left.

This is also a red screen, and is pretty much playing ball against your outside wall yourself to pass some time and play with some coordination. Simple.

Game mode 3: Wall Tennis Right.

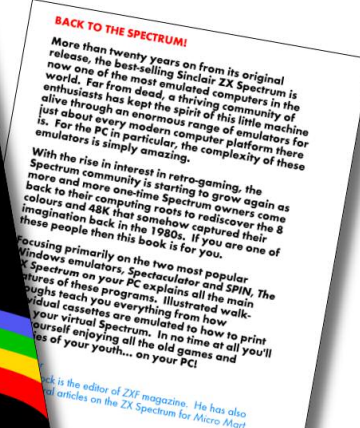
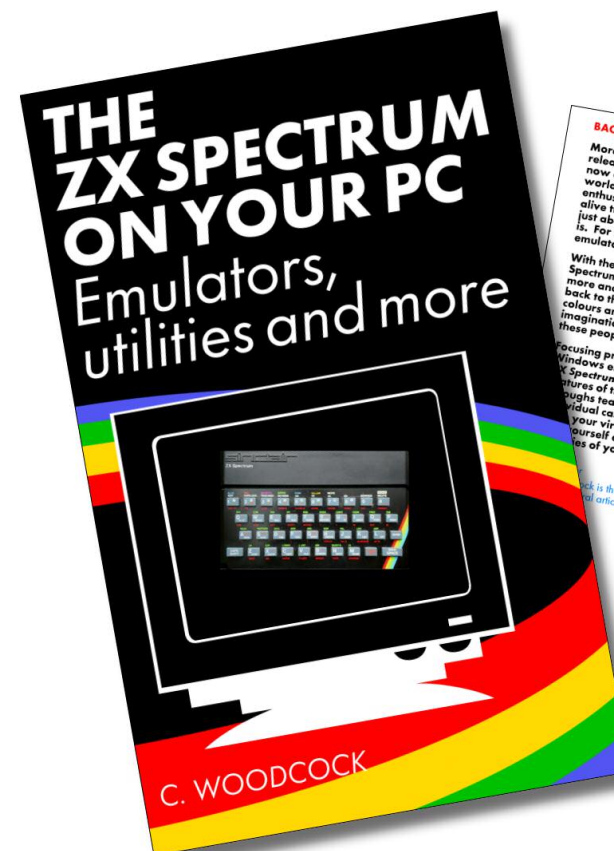
EEEErrrrrr... :o) The same as Left, but from the right. If you are a regular ZX[F] reader and have L & R painted on your shoes each day after you have worked out how to put them on then I understand. For me and everyone else of magnificent sophistication.. there you are then. Of course in my sophistication I selected the computer as the right player and watched it playing ball against its garden wall, all by itself.

Game mode 4: Football

Football is green and played with striped football-kit kind of bats and a goal at each end to try and pull off the shot for a score whilst the ball bounces around the area of the screen between you and your opponent. After the fiddling of the previous two and the more engaging tennis mode this is interesting as it offers something more engaging still. Large open goal areas make this an interesting challenge.

Game mode 5: Hockey

Blue graphics on icy white the masochistic teeny



buy as a paperback from ZXF's online shop at www.cafeshops.com/zxf thanks to Cafepress.com's recent addition of books to their enormous range of customisable merchandise. I have to say to anybody thinking of creating a similar book themselves, receiving my paperback copy through the post was one of the coolest experiences I've ever had! The quality of the finished product is superb.

The paperback costs US \$11.99 (\$10 of this is the fee charged by Cafepress.com for the service), but non-US customers should be aware that they'll have to pay a \$7 shipping charge on top. The

total cost for most of us, therefore, is likely to be US \$18.99, which works out as around about £10.50 by today's exchange rates.

From the comments ZXF has received from its readers, **The ZX Spectrum on Your PC** has reached its target audience and gone down well there. Coverage in both **Retro Gamer** and **Micro Mart** has helped (thanks Shaun). A few long-time Spectrum fans and contributors have expressed disappointment by the range of emulators covered in the book, however - a total of eleven are referred to (**SPIN** v0.5 and **Spectaculator** v6.3 are the main emulators

discussed), which, of course, is only a drop in the ocean compared to what's out there - and the lack of depth in the section referring to tape preservation has left at least one scene supporter feeling unappreciated in his efforts. Not at all the intention, of course.

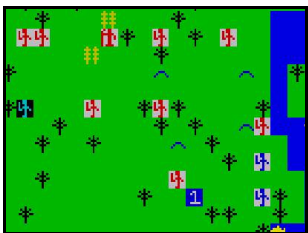
As I write this now it's just over two weeks since **The ZX Spectrum on Your PC** was announced and, during this time, it's been downloaded nearly 700 times.

load



Blue settler

units in the middle of the screen are the victorious that did not fall to the settler unit. The plan is to push up North and take another city as in the top of the image, and right to secure the area.



Red dominance

The area above the target level 1 city of blue is an area of strong red dominance with level 2 and 3 cities. The fight of my area has been costly with red thriving inland. Taking the city 'blue 1' will be quite a battle in this an early escapade for 'I me'... Kevin.

My small ship fought and won (the crew obviously) and brought down a mighty unit of settlers.



Titreme and black dominance

Some damage was done, but now the battle is ended in this area as I have another city to be taken defenseless.

The Tirreme is a small unit carrying ship that is in the middle of the image next to the warrior white on black. He is inversed as on the game he is flashing inversed as selected. It could be the ship is not floatable as the enemy built the city on a diagonal to the water. This will be resolved by the two settler units I have developed and dispatched.

A note on research & units

As research totals gather against the required levels make sure that the cities are prepared to produce the right unit as sometimes you find you mistakenly have the wrong unit produced. It can sometimes be useful though to change the direction of the development as required before this time.

The continuing fight as I fight for a hold on my area of land. Already red advances and destroys the Tirreme, yet is very weakened. It was quite a battle for a dry docked ship :o)



Titreme and red warriors

A time of evolving and a stand off

After fighting and the near eradication of the blue forces, the initial battle with red was successful. Although large in number they are at bay. The computer bugs though as for the finding, I produced a Settler unit without intending as a warrior

was set, so I moved the unit to the coast, I now have another 2 coastal units who are researching mills. These should bring benefits to my campaigns if I am to survive!



Evolving and a stand-off

With gold now at ten units I have finally stepped up the available research to see what kind of results can be achieved. As the environment evolves through battles and discoveries we will see where this still 4K project leads me the gameplayer and explorer of tiny things. Aha! the mills are not necessarily water driven as I now have an inland option. These technicians of my empire are indeed worthy. Continuing to develop warrior units as possible, at times seemingly overwhealed a great time of empire could be at hand.



Breaking the stalemate

Fighting forward and broadening

HEY HEY 16K

>Spectrum anthem gets a video

If you've been following the Spectrum scene over the last few years you'll no doubt be familiar with this song: **Hey Hey 16K** by **MJ Hibbett & The Validators** was released in 2000 and was - so it's claimed - "the world's first ever true internet single." Since then the song's become something of a theme tune to the scene and now, four years later, it's had a video made for it courtesy of **Rob Manuel**. And it's superb.

The video is a Macromedia Flash movie and can be found at www2.b3ta.com/heyhey16k/. The original song can still be downloaded from www.mjhibbett.net, where you can also buy the album from which the song was taken - **Say it with words**.

POWER OF GENTILE

>New AY group debut

Regular readers of ZXF will no doubt be aware of the achievements of AY chip musicians the **AY-Riders**; the Riders are no longer alone, it seems. **Power of Gentile AY-Chip** have recently released their own collection of Spectrum tunes titled **Just in Influence of Wizardry**. This new group comprises the Riders' own (and newset) member **C-Jeff** as well as **Macros**, **Nik-o** and **Riskej**. In contrast to the Riders' MP3 format releases, **Just in Influence of Wizardry** currently consists of a collection of **Pro Tracker 3** files (with the extension PT3) - a fraction of the size of MP3 files for sure, but you won't get far with Windows Media Player if you want to listen to them. The magnificent **AY-3-8910/12 Emulator** by **Sergey Bulba** experiences no such confusion, however. Download this from http://bulba.at.kz/emulator_e.htm and the tunes themselves are at <http://riskej.nm.ru/magicians.htm>; you'll soon find yourself listening to a very pleasing collection of AY tracks indeed.

SMAX

>New development environment

Chris Cowley, the original author of **vbSpec**, is developing a whole new development system; although the project is in its very early stages, the concept looks mighty fine and would give us non-ASM programmers finally a chance to realise all those wouldn't-that-look-good-as-a-speccky-game ideas. Chris' post to WoS/CSS is below:

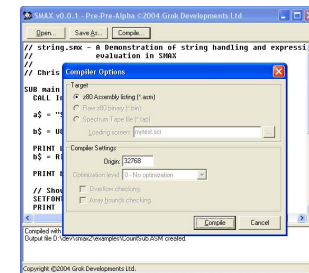
One or two of you may, if you have particularly good memories, recall me alluding to a new speccky-related project that I had in mind a few months ago.

Well, after spending a considerable amount of time reading books which made my brain hurt, and playing around with various bits of code, I've come to the conclusion that I'm not going to get this thing into a usable state any time soon, so I've decided to release what little I've done to see what people think of the idea.

Basically, **SMAX**, is (or at least, will be, one day) a BASIC cross-development system for the Spectrum. A bit like Visual Basic, but instead of producing Windows applications, **SMAX** spits out super-fast, optimized, "100% MACHINE CODE" programs for the Speccky in the form of TAP files.

My intention is to ultimately have a host of simple commands for moving sprites around the screen, playing music and sound effects, and maybe even drawing 3D wireframe graphics. The idea being that anyone who knows BASIC (I have based the language on Microsoft BASIC as this is the most commonly used dialect in the world) will be able to write fast, glossy, machine code games with the minimum effort.

However, I've already spent a whole bunch of weeks of R&D effort on it and all I've got to show for my trouble so far is a very buggy, very basic, rudimentary



BASIC compiler that doesn't work well enough to do

anything practical with at the moment. Writing compilers, I have discovered, is *hard*! And the scope of the project is monumentally huge. In particular, writing library routines is taking up vast amounts

of time (partially because I'm not exactly the most skilled Z80 programmer the world has ever seen).

Therefore, if I do ever get it into a state that could remotely be referred to as "finished", then it *will* cost some money to buy. How much money depends on a whole bunch of factors that I haven't worked out yet, the biggest of which will be whether or not anyone is actually

interested in it.

Anyway, enough waffle, anyone who's interested can look at some screenshots and download a functioning (sort of) "technology preview" at <http://freestuff.grok.co.uk/SMAX/> -- please be aware that I don't want any bug reports at this point. I already know it's very broken!

Opinions (good, bad or indifferent) are very welcome!



Anno Domini (4K) Jonathan Cauldwell

The basic line of development is from AmusementPark 4000/ FunPark. The game is a Civilisation like game that I was awaiting with great interest from the knowledge of FunPark alone.

A note from the author:

"...It's a lot harder to design and write than AP4000 was, and the game is far 'clunkier' but if it helps attract attention to the minigame competition then that's great. As always I'll be submitting the source code along with the game for any techies who may be interested."

Introduction

After downloading I knew that the first task was to read the manual. For me this is something I almost never do. Games like Kingdom are detailed in playing and yet simplistic in their graphic style and presentation leaving the clever coded stuff behind the scenes. *Anno Domini* takes the basic graphic idea and presentation and develops the game mechanics in an immediately sophisticated looking and promising 4K environment.

The magnificent block simplicity of earlier hardware design is evident and works like the games it follows more than twenty years on. The maturity of the coding and development becomes evident in this 4K title. As per Johnathan's introduction text the challenge is to report 'errors left in the game' and of course to work out from his instruction how to play the game. This offers a great challenge in 4K.

The Manual

As I was reading through the manual I was impressed at the scope and clarity of the explanation. Clearly blocked, the text shows the depth of elements with all the civilised aspects of a god sim game of this type. The manual is instructive and simple, and leaves you not foolhearted for a camping holiday within the muse.

I smiled though at the challenge and scale of a project that could be epic teany minisquel. The battle of UDG across lands of green and sees of err... blue.

(Editors note: Ancient times have blue and green rather than a spoken memory of it.) Imagine living only a short and brutal existence with all that fresh air and the magnificence of the land. Ah, another supreme being.... hack... massacre....etc..

Getting Started

After having a fiddle to realise the simplicity of the key controls 'l..er me' started again. Having a play to familiarise yourself with the controls and the game mechanics such as menus is a good idea. For example pressing ENTER without thinking loses a good number of turns. :o) I am your humble narrator making myself seem foolish, of course all for your instruction.

Playing

From unit mode (select 'l' leave 'ENTER') the technology screen is available, and with an initial gold reserve on screen keys offer presses to increase and reduce research tasks. As with AmusementPark 4000 (last year's 4K entry) balancing research budgets is a key task for success in the game. The scope of the research in this game from the instructions is more significant and money is initially tight. I already wish I had a gut-wrenching ride or bad food in a nice comfy theme park.

The epic of my small footnote in history or the glory of 'l Ceaser' has begun. In this, the early stages after getting your mind around the manual and controls, don't be expect hot action as all things have their simple beginnings.

The Unit screen

When your move starts you are on the unit screen. You start on the unit screen with no city, and when you have built one the unit screen remains your centre of the gameplay. When you have units created these show as moveable from this screen. This is also the map view and shows all the enemy units and cities.

'QAOP' direction keys with 'm' for mine building on a hill and 'b' for a city. As each turn begins you move each of your units in turn one point or use 'SPACE' to leave a unit where it is.

Creating new units

Press 'o' to access the city screen and 'c' to change the project. The tally of units has to reach the required amount for a unit to be available. Initially these are settlers or warriors. 'ENTER' returns to the unit screen. ENTER from this screen ends your turn.

Early Strategy

Placing the city in an area may only initially give you one extra point of production and food, but in time as you grow, how you initially placed your city could be more important than you thought. Giving you a possible little edge later.

Initially you can only create one city and travelling to another area with a settler doesn't offer the option of building another at this stage. Warriors are now in preparation for attack and defence, and the local enemy are already looking like they are preparing for battle.

MINIGAME ADVENTURES

>Text adventure competition

The Minigame 2004 competition is now well underway and you can read more about this in **Kevin Bennet's** very thorough write-up in **load** this issue. This year, however, we also have a mini text adventure competition.

Hosted by **Paul Allen Panks**, the **1st Annual 1 to 2K Classic Text Adventure Competition** is looking for entries from a vast range of platforms old and new, from the Spectrum and C64 to Windows and DOS submissions. You can find a complete list of platforms, along with the competition rules, at the contest's official web page at <http://panks.freeshell.org/advcomp.html> The adventure in its playable form must be 2K or less, so a BASIC program exceeding this could only be submitted if it was compiled to a smaller size.

The competition runs until 29 September.

ANOTHER COMPO

>CC4 August event

Thanks to Kevin Bennet for pointing me in the direction of this summer event, taking place on 21 and 22 of August at the concert hall of Leningrad's Youth Palace, St.Petersburg. The **Chaos Constructions 2004** (CC4) event includes 8-bit entries and specific Spectrum competitions: 512b Intro and 4k Intro, 640k Demo, ZX Spectrum Graphics and ZX Spectrum AY-Music. The number of entries in the latter two competitions is restricted to 30 and 15 respectively, so expect high quality. The organisers will be providing basic Spectrum hardware only - any extra kit is ok, but up to you if you want to bring it.

For those of you unable to make it to Russia this summer, keep an eye on www.zxdemo.org and <http://raww.org> for results information.

Kevin asked me to add "I would like to thank Yerzmyey for his unflagging support and interest in Sinclair and the world of still developing computer devices and artistry in general." Well said.

BETA PDFS

>Super BASIC docs online

If you've ever had the pleasure of programming the SAM Coupe in BASIC then you'll probably agree that it's one of the best BASICs there is. Dr Andrew Wright was its author and he's also the chap responsible for **Beta BASIC** on the Spectrum. Little bit of history for you there.

Evidently a fan of the language, **Steve Parry-Thomas** has been uploading a number of key resources to **WoS** in recent weeks. These include PDF versions of the Beta BASIC manual (version 3) as well as PDF versions of the Beta BASIC newsletter, which makes for fascinating reading. And the PDFs are completely searchable to, so the example programs can even be cut and pasted straight into a virtual Spectrum running BB if you use **SPIN** and its text entry feature in the Keyboard helper. Nice.

CPU TOMFOOLERY

>Not all Spectrums are equal

More than twenty years have passed since the Spectrum's release and now a new fact about it has been uncovered. A tiny difference in timings has emerged between seemingly identical Spectrums, such that a small number of clock-critical demos vary in their execution. Starting as an investigation into an apparent bug in **RealSpectrum's** timings, a long discussion about this on comp.sys.sinclair concluded that the difference actually had to be down to the CPU chips used. Emulators to date have assumed there to be no difference between 'genuine' **Zilog** Z80A CPUs and alternative chips labelled "SCS Z80A - Italy" or "NEC 780-C"; it

appears this is not in fact the case.

Differing in timing by just one cycle, the alternative CPUs are unlikely to give themselves away in the vast majority of Spectrum titles, but the timing sensitive **Megalomania** demo exposed the masquerading blighters for what they were - on some Spectrums its multicolour bars in the top border wobbled and on others they were steady as a rock. Gotcha!

An option to switch CPUs has now been built in to most emulators under current development.

JSW: THE MOVIE

>55 minute Willy RZX

Since its launch, the **RZX Archive** at www.rzxarchive.co.uk has been growing steadily. And one of the latest files to be added is something of a masterpiece. Weighing in at a mighty 55 minutes long, **Daren's** complete **Jet Set Willy** recording is a quite remarkable accomplishment - particularly since he only loses one life in the process.

For those of you unfamiliar with the format, RZX is the standard through which keystrokes and joystick waggles to an emulated Spectrum are recorded, allowing you to watch a replication of your jaw-dropping performance at any time. Any RZX-enabled emulator will accept an RZX file (it doesn't matter which emulator it was recorded on).

In this particular case there's been a bit of a helping hand to Daren's Willy control - a new feature being tested for a future version of **SPIN** which allows to you 'roll-back' the recording you're making to any previous point in the game (ie, just before you died) and continue recording from there. The intention is that this can be used to help create as near to perfect RZX recordings as it's possible to make. Apart from just being good at the game, that is.



Maziacs1 (1K) Paolo Ferraris

An impressive and simple 1K game based on an original that was impressive in 1983 and still carries its qualities. Large block sprites with simple movement in a fun little maze game with colour. A full screen effort that is akin to earlier computers than the Spectrum that is historically interesting. Each time you play the maze it's different, if a little easy. Still fun to play and holds the basic gameplay of the 1983 version.

Pipes (4k) Dominic Morris

Pipes is a Pipemania clone. It features bonus squares, edge flowing and 8 levels which completely wrap around and become even harder - less time and more pieces to flow through. An excellent version of the old Spectrum title Pipemania. It would be interesting to see more from the programmer.

Play Ball! (4K) Paul Grenfell

An excellent game that looks inspired by Wizards Lair from Bubblebus software in the 80s. Considering 4K especially the level graphics are an excellent use of block graphic design with nicely used colour. It plays well with solid graphics, animation and no sprite flicker. The graphics all have their defined characteristics and sense of humour. One I would like to see developed for release as the core potential is already very interesting. A nice little environment for a play as it is.

ZXTictac (1K) Stefano Bodrato

An unimpressive looking game as noughts and crosses or TicTacToe is played so often and still on paper. A computer version seems less responsive. It could be something about primal

marks in the human battle of minds. That said to get anything on the screen is more than I can achieve :o) Excellent to see people efforts and enteries. It works and all within 1K or RAM, what will he achieve by next year?

The current 2004 entries.

At the time of writing this introduction there have only been a few entries as the event has only recently started. So far though the efforts made are excellent. I hope that this though will be an excellent introduction, and from the web link you can then continue to follow the progress: www.ff2.com/minigame/

This year I also have some programmer feedback to offer, some allow their efforts their own integrity and offer thinking within the supplied text files. In future though, any additional developments from these artists I hope to include in submissions to ZX[F].

Area 51 (4K) Jonathan Cauldwell

Area 51 is Jonathan's first entry this year with another to follow. Immediately you are playing a game like Manic Miner with all the traps and basic gameplay that you would expect. The gameplay doesn't disappoint in a fresh thinking 4K Manic Minery escapade with immediately evident hallmarks of Jonathan's developing work.

The superb stability of image, sprites, animation with the usual excellent details and amusing characteristics and support are supported by the playable game environment. The little mine cart that rumbles amusingly about on one level shows the heart of fun in the application of well worked and magnificently crafted zeros and ones. The use of the screen array is solid and very smooth direct coding of the screen responses that was evident and

a key characteristic of Rough Justice, a previous release revived in ZX[F] issue 6.

I started to play again after loosing all five lives to try and get further through the well considered screens. After decades of Manic Miner familiarity the game has its own pace, confidence and maturity.

I always appreciate a free download and the pleasure of the game, and as last year the potential for development in and from the Minigames competition could be really interesting. A magnificent Manic Miner-like game that respectfully acknowledges this in the superb silence of its realisation with the obligatory ditty (AY sound) helps create the meandering gameplay with those deaths that you can't quite work out again, again and again.

Falldwon forever (1K) Fikee

Immediately impressive 1K design, I asked where can I buy this 1K computer... I did! The use of the Spectrum ink/ paper block setting with solid clean block design and excellent animation with a small character was all magnificently considered. The drop shadow like block use made me think I was playing into the area rather than dropping drop through the play area. I found that playing the game was an excellent simple consideration, an accomplishment to other thinking.

Initially I played without any collision detection. After a while I found that the game is a little like the old Zippy game collecting grass in the gardens as you are held by a wall as the screen scrolls to be crushed or find a way out. It gives you that moment extra to panic or survive as the game picks up in pace.

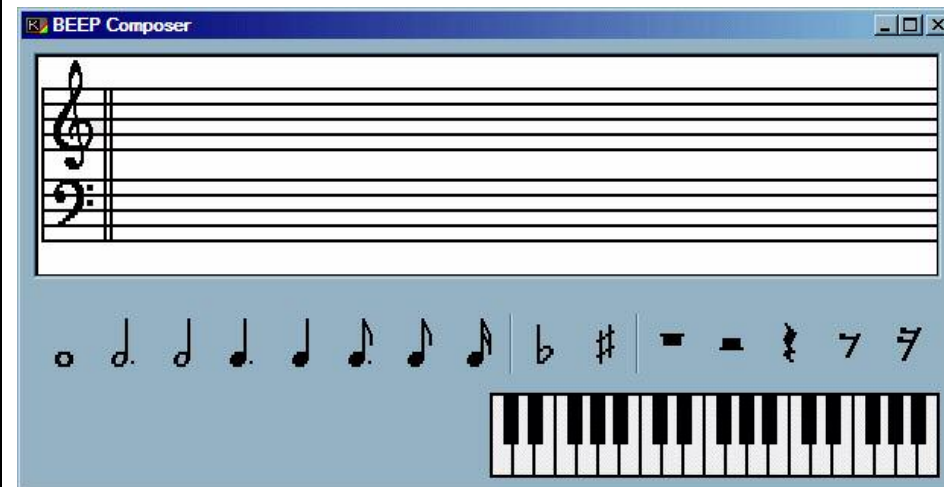
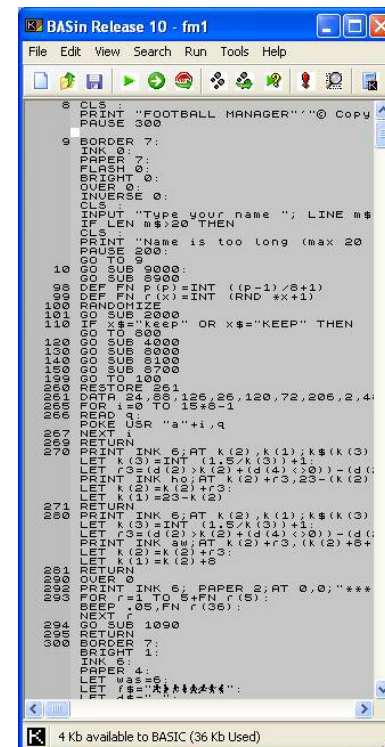
What can you do with 1k, superb implementation that erases the

BASin Release 10 by Paul Dunn

By now it should be apparent the extremely high regard I have for this piece of software. When **Paul Dunn** first released this little program as **SPINLite** in 2002 (the very last day of 2002, in fact) there was some general confusion amidst the community as to what exactly it was. A year on a half later and not only do we all get it now, but **BASin** is no longer alone. In the last six months there's been a lot of talk about program development environments - **Tommy Gun** from **Tony Thompson** last issue and now **SMAX** from **Chris Cowley**. Neither of these titles are trying to do *quite* the same sort of thing as BASin, but if we had to categorise these three titles then they'd probably all end up in the same pigeon hole by common consensus - and BASin was there first. As these tools develop, I can't help but think we're watching the beginnings of a new era in Spectrum software.

Release 10 came out at the end of May and 10a, a collection of bug fixes following initial feedback, about halfway through June. All the features of previous releases are still there, but now there is a clear distinction between the programming environment and the resulting output, with a brand new, much more user-friendly editor window (see image right) in which BASIC code can be written and a separate emulator-like window in which the program runs.

Ask and you shall receive. Back in ZXF issue 6 I marvelled at BASin's brilliant UDG editor and rather cheekily suggested a similar toy for creating BEEPed tunes on. At the very last minute before this issue's publication, Dunny pointed me to the graphic below - the 'BEEP Composer' - a work in progress. What can I say, except watch out for release 10b...





Minigame compo

Author: **Various** Price: **Free** Reviewer: **Kevin Bennett**
 Website: <http://www.ffd2.com/minigame/>

The Minigames Competition has been running for a few years now. The competition covers a wide range of 8-bit computers and the quality of the entries is improving all the time. Here Kevin Bennett takes a detailed look at the Spectrum entries for both the 2003 competition and those submitted so far for the 2004 competition.

2003 was the first year that I had been aware of the Minigames Competition although I have had an active interest in Sinclairs since my first Spectrum in 1986. The event is separated into two categories of 1K and 4K entries. The challenge for the programmers is to offer a maximised game code within the category. This has previously lead to interesting work where you can really begin to see where the efforts of programmers lie. One excellent example from last year was **ZBlast** by **Russell Marks** as he describes in the additional text file the differences between the 1K and 4K efforts that you can see realised on your screen.

As an introduction to the competition and to put the programmers efforts into context, here are the mini reviews for last year's entries (details of the games and downloads can still be found on the website.)

Scrolly Stack (4K) Russell Marks

Scrolly Stack is an excellent use of 4K with superbly done stylised and simplistic drawings of a house. The small graphic details of the pieces are appreciated and the images give extra flair to

an extremely small game. (4K) Not original, but superbly squeezed into a small amount of resources. Could be an excellent part of a games compodum, with maybe a few extra options including the 1K mode as an option.

ZBlast SD (4K) Russell Marks

Impressive use of animation/ colour and suprising sprite detail and design with solid blast *pwwooop pwwooop* and *crunch* sounds. Fast, with large and simple enemies that get crazy and chaotic with some interesting enemy movement coordination and attack patterns. Within 4K there is the whole presentation of a complete game package, a scrolling starfield title screen with levels and ending. The only criticism - is it too mad to be playable... or more like... do I stand a chance? :o) Very entertaining - an excellent example of code maximisation that could be interesting if expanded and developed in what looks like new efforts for a new market.

[NOTE] *Russell's games are currently available from Cronosoft.co.uk on a compilation from the minigames 2003 competition with other titles on cassette tape or as a free download.*

Semi stack (1K) Russell Marks

Semi stack is excellent because of the use of simple coloured squares like lights. It plays just as well and a little faster than scrolly stack. Interesting use of ZX81-like resouces..and in colour too!! (1K)

TinyZB (1K) Russell Marks

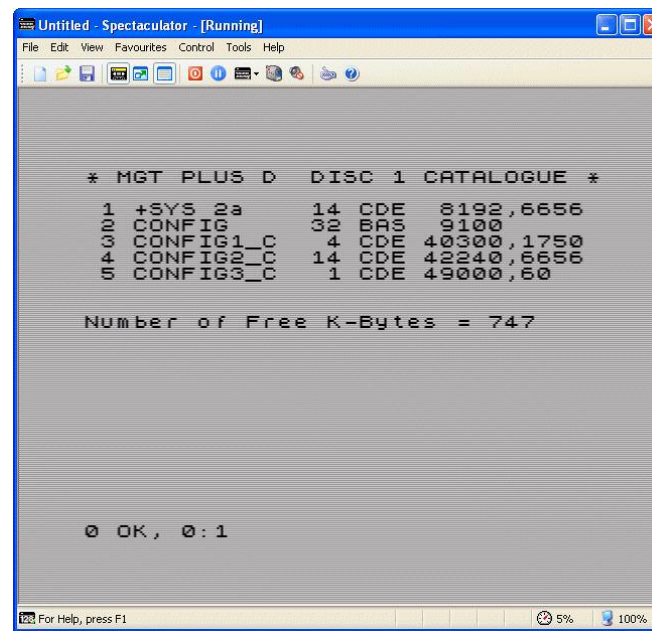
Obviously reduced version, now reminiscent of Space invaders where you move left or right and fire at the enemy. The graphic design and colour is based on the larger version with sound, but has a reduced sprite selection for the attackers. BUT!! I must complain that someone stole the other second gun as I really did need it :o) A fun demonstration of maximising code that is entertaining, but not such a complete package as it looses its pace and diversity.

Dotathon2 (1K) Russell Marks

Very simple yet interesting vector tunnel type game as seen in previous games like Dan Dare III, yet stands alone superbly due to its smoothness and design. Within 1K is a simple and very smooth game with effective sounds that inform of progress and lives, etc. The only tiny :o) drawback is that there is no intro screen, but what can you expect?!?? A very simple yet enjoyable distraction that has that play again and again aspect. Most interesting is that the game is not dependant on being a reduced version of something else (not that this is a criticism of other people's efforts) that makes it unique in its own right.

Arachno Joe (4K) Dinu Cristian Mircea

Adventurous 4K game with excellent scrolling and suprising scope of graphics/ colour and gameplay dynamics with a simplistic yet effective intro screen (using blocks and colour to simulate a city skyline). This is part

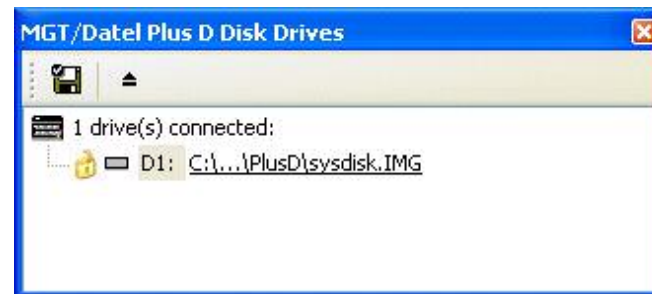


Spectaculator

Version 6.30 by Jonathan Needle; www.spectaculator.com

As discussed last issue, the next big step for Spectaculator is MGT/Datel **Plus D** support, the intention being that this will include support for actual Plus D formatted floppy disks, just like *RealSpectrum* - and even on Windows XP.

Version 6.3 isn't at that level of completion just yet, but it's close - just about all aspects of Plus D support have been implemented except for that real disk access. Nothing's been released yet, but ZXF's been given a sneak preview.



True to his usual form, Jonathan has pretty much implemented it all and completely without drama, by which I mean that everything that is supposed to work does work. You can connect up to two emulated disk drives to the emulated interface - just like the real thing - and *Spectaculator* supports both of the existing file formats developed for this hardware - the **.MGT** and the **.IMG** disk image formats. The system can run on either the original **G+DOS** operating system or the **Uni-DOS** system that was later available via an enhanced ROM.

Of course the Plus D wasn't *just* a disk interface - it was a printer interface too - so an added bonus is the printer redirect - either to a file or a communications port, where you could connect a real printer to receive it.

It's basically a fairly flawless implementation. The next step for users will be to actually source some software for it (although I suspect a large majority of ex-PlusD users will be most interested in converting old disks of theirs). The good news on this front is that the **Spectrum Disk Preservation Project** is now expanding its aim beyond just the **+3** disk images it has previously worked to collect and .IMG/.MGT images have been specifically mentioned in relation to this.

In fact, you can still buy Plus D software. **Chezron Software's Outlet** diskzine originally started out life on the ZX Microdrive way back in September 1987, but back issues are now available to purchase on Plus D disk (the Plus D and its predecessor, the **Disciple**, are both compatible with Microdrive syntax). You can get hold of these from the **Fidcal** (new name for Chezron) site at www.fidcal.com/Outlet/ 1 to 5 disks cost £2.00 each, 6 to 11 disks cost £1.70 each and 12 or more disks cost £1.50 each.



"Tatung Einstein Web Site" easily found by typing "tatung einstein" into the Yahoo search engine.

The Url
"http://members.lycos.co.uk/albert stc01"

Better a mirror site with full page no advertising column at "http://mysite.wanadoo-members.co.uk/retrocomputer/index.html"

I try to make the site a resource centre for those who want to develop on the Einstein's hardware and software but look with envy at the advances you have made on the Spectrum scene. IDE hard drives, compact flash cards and a very good emulator for the PC "ES.Pectrum". Whats more an excellent magazine in *.pdf format for hard copy reproduction on the home computer/printer.

Pera Putnik's simple 8bit IDE HD interface and also the 16bit interface seem to have ability to be adapted for the Einstein TC01. Also Roelof Koning's compact flash card add on for Speccy. These appear generic to the Z80 expansion bus so could be used on the TC01. A lot of work on the firmware and software to do for Einy enthusiasts though.

I used to use the Spectrum+3 a lot. Still have four packed away but I haven't the space to justify playing with +3s and also the Einstein at the moment. I picked up the +3s at boot sales for a £1 a piece usually because the internal 3" (or more correctly 3.25 inch drive) was broken. For someone that has an Einstein TC01 and accumulates spare bits for it this was not a problem. The 3" teac drives that came with the TC01 are rugged and shaft driven and look like they will last forever. (A jpg picture of this drive can be found at "http://mysite.wanadoo-members.co.uk/retrocomputer/3IN

CHWEB.htm". Download and use this web cam shot if you wish.) The teac drives would simply attach with ribbon and edge connectors to the the +3's external drive port. The power supply came from a PC PSU. Spectrum and Amstrad's internal drive power supply have 12v & 5v the other way round. The TEAC drive fitted would be for drive "B" only. To get drive "A" working on the external drive port I opened up the +3 and wired a soldered link to the edge board connector. (I've placed a jpg web cam shot graphic up on the web site for you to view, download and use if you wish "http://mysite.wanadoo-members.co.uk/retrocomputer/spe cbd.jpg".)

Another thing I did was to connect a centronics plug (printer plug) to the ribbon cable from the the +3's external floppy drive port then attach it to a 4 way data switch box. On three of the outputs-more centronics plugs and ribbon cable to a 3", 5.25" and 3.5" floppy drives. As long as the same format was used for each different sized drive I found these could be switched over safely while powered up and read an write was not in progress. This was all for drive "A" so a drive "B" can still be fitted or more optional drive "B's with another switch box unit.

The three drive unit was easy to plug in for the +3, Einstein or also the Amstrad CPC 6128 I had.

The TEAC 3" drive can also be installed into a 386 or 486 PC as floppy drive "B", power cable and data cable just as a 5.25" 360 floppy drive would. No use for windows or ms/dos but with CPDRead it will create extended disk image files from Einstein, Spectrum+3 and Amstrad CPC 3" floppies. CPDWrite will create 3" floppies for all three computers

from the disk image files.

I am not a proficient hardware or software engineer more of a tinkerer and dabbler crawling my way up the learning curve. ZXF and the Spectrum scene in general are being helpful. There is always some information where jargon and technicalities are put into english I can understand. It is providing the confidence I need to experiment on with IDE and compact flash for the Einstein.

The Einstein (as with the MSX) was able to emulate a speccy. Details at ""http://www.crashonline.org.uk/36/specif.htm"". The Einstein needed a hardware add on to do this as there was no tape interface for the TC01.

I have no experience of the speculator of have one to play with but it has got me thinking that the Einstein could be loaded up with an adapted version of +3 basic and dos. The TC01 unlike many retro computers did not boot up into its own version of home basic. A boot disc was needed to load in a DOS usually XTAL DOS (a CP/M clone). Basic programs like any other software was loaded in off the disks. Could a version of +3 basic with adaptations to Einstein hardware be loaded in. The dos part might take some juggling to read +3 disks but a CP/M PLUS o/s is now available for the Einstein and with a utility to read 720kb 3.5" ms/dos disks. Is this an indication that the +3 could run on Einstein hardware? Have the readers of the magazine any ideas?

Best Regards

Chris Coxall

Thanks for your comments Chris.

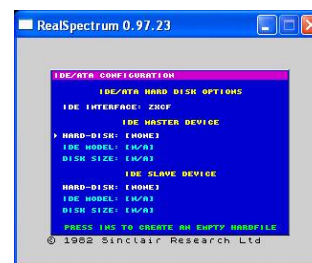
RealSpectrum

Version R14 (0.97.23) by Ramsoft; www.ramsoft.bbk.org

This is it folks - the very last version of **RealSpectrum**. Sniff. Version R14 of **Ramsoft's** masterpiece represents the end of an era; for the Italian duo it's now time to concentrate on bringing its successor - the now mythical **RealX** to fruition. And for that we'll wait with baited breath.

So is the final chapter in the RealSpec saga a conclusion worthy of its plot? ZXF thinks so. In the main part, R14 is a collection of improvements to existing features and a number of bugfixes. There's support for CSW v2.0 amongst other things and there's now a smoothed edges

video option, giving results similar to those obtained by **HighSPEC** (see issue six). But R14 does have one big new feature up its sleeve and it's one that ZXF is chuffed to bits with: support for Sami Vehmaa's **ZXCF** Compact Flash interface. So here's how to set it up.



Load up RealSpectrum as normal. Press Ctrl F4 to bring up the IDE/ATA Configuration panel. At 'IDE Interface' press the left arrow key once or until 'ZXCF' appears. Press the down arrow key to get to 'Hard Disk' and press Insert on your keyboard.



At the IDE/ATA parameters panel press Escape if you are happy with the default size (15.750 MB). You'll now be asked to give your disk a name. Give it one and press Enter. You're now returned to the IDE/ATA Configuration panel. Press escape again...



...and up pops the ZXCF boot-up screen. The first thing we need to do is to format our disk. Enter the following:

FORMAT % ERASE 0,15

Type NEW; on the refreshed boot screen Unit 0 now reads 'IDEIOS-formatted'.



ResiDOS - ZXCF's operating system - doesn't use folders; instead you split your disk up into partitions, six of which can be accessed at once. Type:

FORMAT % DATA "name",size

The name can be up to 16 characters long; sizes above 256 are assumed to be in kilobytes; below in megabytes.



Last of all we need to map our partition to a drive letter. Type:

MOVE % "A:" IN "name" ASN

You can use any letter from A to P to refer to a drive, and ResiDOS can work with six drives at a time. Of course you can unmap a drive at any time in order to map another.



You're ready to go! F2 on RealSpectrum performs an NMI, which brings up ResiDOS's Task Manager: here you can juggle up to 16 48K Spectrum programs, any of which you can save to your drive(s) as a snapshot file.

For more information on ResiDOS, check out Garry Lancaster's pages at www.zxplus3e.plus.com/residos/